

Serial No. 10/743,237

Docket No. 136721-1

RECEIVED  
CENTRAL FAX CENTERREMARKS

MAR 07 2007

Applicants appreciate the consideration shown by the Office as evidenced by the Office Action mailed on December 7, 2006. In that Office Action, the Examiner rejected claims 48-56. In this Response, Applicants have amended claim 48. Claims 1-56 remain pending in this application, with claims 1-47 currently withdrawn from consideration on the basis of a restriction requirement. Applicants respectfully request favorable reconsideration in light of the above amendments and the following remarks.

**0. Information Disclosure Statement**

Applicants acknowledge the Examiner's remarks indicating the failure to receive copies of references B1-B4. Applicants will provide such copies in a separate correspondence.

**1. Claim Rejections—Section 112**

Claims 48-56 were rejected under 35 U.S.C. 112, second paragraph. The terms "nanocomposite" and "nanoparticle" were stated to be indefinite. Applicants respectfully submit that the amendment to claim 48 overcomes this rejection by adding a specific size range to the nanoparticle limitation recited in this claim. Support for this size limitation can be found, for example, in paragraph [0026] of the originally filed specification. The term "nanocomposite" is thus defined as the material comprising the matrix material in which the nanoparticles are dispersed, as recited in the claims and described in the specification. This definition is in keeping with the ordinary meaning of "nanocomposite" understood in the art. See, for example, [http://www.the-infoshop.com/study/bc19082\\_polymer\\_nano.html](http://www.the-infoshop.com/study/bc19082_polymer_nano.html) (a material having "any filler submicron in size"). Applicants respectfully request reconsideration of this rejection.

**2. Claim Rejections—Section 102**

Claims 48 and 53 were rejected under 35 U.S.C 102(b) as being anticipated by each of Benn et al. (US 5006163), hereinafter "Benn"; Gennari et al. (US 5049355), hereinafter

Serial No. 10/743,237

Docket No. 136721-1

"Gennari"; and Rousset et al. (US 5462903), hereinafter "Rousset." Applicants respectfully traverse each of these rejections.

None of the three references teaches, suggests, or discloses each and every element recited in independent claim 48 as amended herein. Benn discloses a material having 2.5 - 4 percent of nanoparticles by volume. This limitation in volume percentage is indicative of the low concentrations of nanoparticles to which conventionally processed materials are limited. See, for example, paragraph [0021] of the present application. In contrast, Applicants' recited material contains nanoparticles at loadings from about 5% to about 30% by volume. Gennari clearly states that the process disclosed therein is limited to materials having metallic matrices selected from group V and VI of the periodic table. See column 3, bottom line, to column 4, top line. The iron- and nickel-alloy matrices recited by the claims are not included in the list of materials deemed suitable for use by Gennari. Moreover, Gennari limits nanoparticle loading to 1.5% by weight on the upper end, which converts to about 3 volume percent (using the materials disclosed in the example #1 cited by the Examiner as a basis for estimation). Finally, the material disclosed in Rousset is a ceramic-matrix material having a dispersion of metallic nanoparticles and thus does not comprise a metallic matrix as recited in the instant claims. For example, the summary table referred to in example 2, cited by the Examiner, located at the end of the description section of Rousset, shows that the material of example 2 had only 5.4 weight percent of metal particles dispersed in the aluminum oxide matrix.

As the three applied references fail to teach each and every limitation recited in independent claim 48 and its dependent claim 53, Applicants respectfully submit that these claims are allowable. Favorable reconsideration is respectfully requested.

### 3. Claim Rejections—Section 103

Claims 49-52 and 54-56 were rejected under 35 U.S.C. 103(a) as being unpatentable over each of Benn, Gennari, and Rousset, in view of allegedly admitted known prior art set forth in Applicants' specification. Applicants respectfully traverse this rejection. Each of these claims depends from claim 48, which is believed to be allowable over the applied

Serial No. 10/743,237

Docket No. 136721-1

references for reasons described above. Applicants respectfully submit that claims 49-52 and 54-56 are thus allowable due to their dependency from an allowable base claim.

RECEIVED  
CENTRAL FAX CENTER

MAR 07 2007

#### 4. Conclusion

In light of the remarks and amendments presented herein, Applicants believe that this serves as a complete response to the subject Office Action. If, however, any issues remain unresolved, the Examiner is invited to telephone the undersigned at the number provided below.

Respectfully submitted,

---

Paul DiConza  
Reg. No. 48,418  
General Electric Company  
Building K1, Room 3A60  
Telephone: (518) 387-6131

Niskayuna, New York  
Wednesday, March 07, 2007

Page 13 of 13